

RESPONSE TO REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH:

Claim 1 has been rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and /or use the invention. According to the Examiner, "Although the specification teaches preferred hydrocarbon solvents and preferred polar organic solvents it does not enable the claim that all hydrocarbon solvents and polar organic solvents would work in the instantly claimed purification process as described in claim 1." Originally filed claims 1 and 6-8 have been amended to distinctly point out which solvents applicants believe will work in the claimed process. Applicants respectfully submit that the existing rejections under 35 USC § 112, 1st paragraph have been overcome by the amendments set forth above.

RESPONSE TO REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH:

Claim 1 has been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has clarified the rejected "hydrocarbon solvent" and "polar organic solvent" by limiting the range of solvents of possible use in claim 1 to "aromatic and aliphatic hydrocarbon solvents" and to "alcohol solvents," respectively. The amendment finds complete support in the specification as originally filed (see page 3, lines 21-25). Originally filed claim 5 has been deleted and the claims 6-8 have been amended accordingly.

The Examiner has also objected to the statement "and preferably in L form" in claim 1 as being indefinite. Claim 1 has been amended, and the indefinite statement, "and preferably in L form" has been deleted. New claim 16 reciting the preferred form of the serine portion, has been added.

Applicants respectfully submit that the existing rejections under 35 USC § 112, 2nd paragraph are overcome by the amendments set forth above.

RESPONSE TO REJECTIONS UNDER 35 U.S.C. § 102:

Claims 1-15 have been rejected under 35 U.S.C. § 102(b) as being unpatentable over De Ferra et al., US Patent No. 5,700,668. Applicants respectfully traverse this rejection.

The Examiner has not appreciated that in the present invention an extraction with a polar organic solvent and water is carried out simultaneously, whereas according to De Ferra consecutive extractions, first with water and then with methanol, are carried out. In particular, the Examiner's attention is drawn to the fact that De Ferra teaches the preparation of phosphatidylserine in a mixture of toluene and water, and a subsequent purification step in a diphasic system of n-heptane and methanol (see De Ferra et al, column 4, lines 18-23; and Examples 2 and 4, columns 5 and 6).

The present invention as claimed refers to a purification process carried out on a hydrocarbon solution of the product to be purified which comprises adding to it a mixture of water and an alcohol. The reaction mixture therefore comprises at the same time an alcohol solvent, a hydrocarbon solvent and water, whereas according to De Ferra water and methanol are never simultaneously present in the reaction mixture. Thus the De Ferra method is distinctly different from the invention presently claimed. Applicants accordingly request reconsideration and withdrawal of the rejection under 35 U.S.C. § 102.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103:

Claim 1-15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over De Ferra et al, U.S. Pat. No. 5,700,668 (De Ferra). According to the Examiner it would have been obvious to a person skilled in the art "to employ the various lower alcohols [i.e. isopropanol] in the extraction process since this is a matter of choice of the practicing chemist and since the variation in the partition between the alcohols is negligible."

Applicants respectfully traverse the rejection. The novel difference between the present invention and the process disclosed by De Ferra is the particular purifying efficacy of a mixture of water and an alcohol solvent in combination with hydrocarbon solvents. Accordingly, the inventiveness of the present process should be evaluated on the basis of this difference between the present invention and that disclosed by De Ferra, and not on the basis of the use of isopropanol instead of methanol.

Applicants point out that in the prior art process a diphasic system (toluene/water) is used for preparing phosphatidylserine, and a solid product is recovered which is purified in the diphasic system n-heptane/methanol. As reported in the present application, page 2, lines 7-13, by extracting a toluene solution of the phospholipid mixture obtained as described by De Ferra, with the same amount of water, and then by separating the two phases, it is found that the content of serine in the organic phase and the activity of D-phospholipase are unchanged with respect to the values found before the extraction with water.

In De Ferra water is removed before the addition of methanol, in the present process a hydrocarbon solvent, an alcohol solvent and water are simultaneously used. In the instant Application it has been unexpectedly discovered that by extracting the same toluene solution of

the phospholipid mixture with a mixture of water and an alcoholic solvent, impurities can more successfully be removed. The difference between the present invention and the cited prior art is not only in the use of isopropanol instead of methanol, but in the simultaneous use of a hydrocarbon solvent, an alcohol solvent and water.

The obviousness rejections set forth in the January 28, 2002, Office Action was based upon the Examiner's belief that it would have been obvious to one of ordinary skill in the art "to employ the various lower alcohols [i.e. isopropanol] in the extraction process since this is a matter of choice of the practicing chemist and since the variation in the partition between the alcohols is negligible." In regard to the inventiveness of the present process, it is the addition of an alcoholic solvent to water, not which type of alcoholic solvent was added that makes the invention nonobvious. De Ferra did not teach or suggest the simultaneous use of a hydrocarbon solvent, an alcohol solvent and water. In consideration of the foregoing comments, Applicant believes the present invention was unexpected and non-obvious in view of De Ferra.

In view of the above remarks, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 103.

CONCLUSION:

The Applicants respectfully request a timely Notice of Allowance and invite the Examiner to contact the undersigned if there are any remaining points at issue.

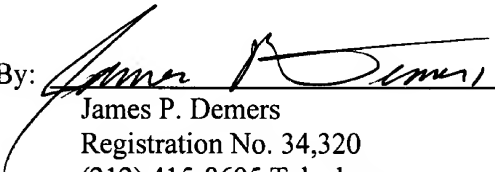
AUTHORIZATION:

The Assistant Commissioner is hereby authorized to charge any additional fees which may be required for this response, including all fees pursuant to 37 C.F.R. § 1.17 for its timely consideration, or credit any overpayment to Deposit Account No. 13-4503. Order No. 0558-4017.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

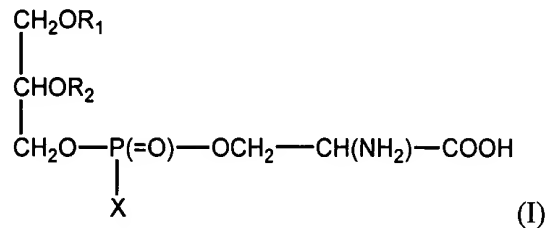
Date: MAY 15, 2002

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ATTACHMENT A

1. (AMENDED) Purifying process for phosphatidylserine having formula (I)



where R_1 [e] and R_2 , identical or different, are a C_{10} - C_{30} acyl group; X is OH or OM, where M is chosen from the group of alkali metals, alkaline-earth metals, ammonium and alkyl ammonium, and where the serine portion is in D, L or racemic form, [and preferably in L form,] comprising the extraction of said phosphatidylserines from a solution in a hydrocarbon solvent chosen among aromatic and aliphatic hydrocarbon solvents, with a mixture of water and [a polar organic]an alcohol solvent.

6. (AMENDED) Process according to claim [5]1, in which said alcohol solvent is chosen among alcohols containing 1 to 5 carbon atoms.

7. (AMENDED) Process according to claim [5]1, in which said alcohol solvent is chosen among secondary and tertiary alcohols.

8. (AMENDED) Process according to claim [5]1, in which said alcohol solvent is [i-]isopropanol.